



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/594,917	09/29/2006	Tomohiro Yabu	4633-018SPUS1	5513
2292 7590 06/23/2009 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747				
EXAMINER				
COX, ALEXIS K				
ART UNIT		PAPER NUMBER		
3744				
NOTIFICATION DATE		DELIVERY MODE		
06/23/2009		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary

Application No.

10/594,917

Applicant(s)

YABU ET AL.

Examiner

ALEXIS K. COX

Art Unit

3744

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/CS-100)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____
- Paper No(s)/Mail Date 9/29/2006, 9/25/2007, 5/09/2008

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999). The term "hermetically shaped" in claim 6 is confusing as it is unclear which particular shape the applicant is referring to. It is presumed to be used by the claim to mean "approximately rectangular parallelepiped", as per line 24 of page 28 of the specification, while the accepted meaning is not defined, as the term "hermetic" refers to a state of being sealed off completely, not to a specific shape. The term is indefinite because the specification does not clearly redefine the term.
4. Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 7, the phrase "oriented in the thickness thickness direction" (line 6) is undefined and unclear, as it is unclear what the applicant refers to by the "thickness direction". In accordance with the figures, the phrase is interpreted for the purpose of examination as meaning "vertical" or "perpendicular to the bottom of the main casing". Additionally, the phrase "center of axle" on line 6 should be changed to "center axle," the word "it" on line 5 should be changed to "the air", and the phrase "its impeller" should be changed to "the impeller of the air exhausting fan".

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1-3, 4-6 and 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mathiprakasam (US Patent No. 4,430,864, hereinafter referred to as '864).

Regarding claims 1, 2, 4, and 5, '864 discloses a humidity control system (see column 1 lines 60-67) for supplying either one of a dehumidified first air stream and a humidified second air stream to an indoor space and for discharging the other air stream to an outdoor space, the humidity control system comprising a refrigerant circuit (30, 40, 50, 60, 20, lines between) which includes first and second adsorbent-supported heat exchangers (30, 40, see column 5 line 34) which are fluidly connected in the refrigerant circuit to perform a refrigeration cycle, and which is capable of reversing the circulation direction of the refrigerant (50, 60, see column 5 lines 35-40); a main unit (see figure 2) which includes a main casing (exterior lines of figure 2) having therein an air passageway in which the heat exchangers are disposed (30, 40, see figure 2); and a switching mechanism (90, 100, see column 5 lines 62-64) for changing the distribution route of air in the main casing depending on the circulation direction of refrigerant in the refrigerant circuit so that the first air stream is passed through one of the heat exchangers that is functioning as an evaporator while the second air stream is passed

through the other heat exchanger that is functioning as a condenser (see column 6 lines 6-20); and a compressor unit (10, see column 5 line 33) in which a compressor of the refrigerant circuit is provided. It is noted that the installation of the compressor unit in any particular location is not explicitly disclosed by Mathiprakasam. However, it is well known in the art and would have been obvious to one of ordinary skill in the art at the time of the invention to install the compressor unit outdoors in order to prevent additional heat entrance into the conditioned space, or indoors in a machinery room in order to make maintenance practical regardless of weather, depending upon local conditions, such as prevailing weather and building costs.

Regarding claim 3, as the compressor unit comprises all elements not shown in figure 2, the compressor unit does house an expansion mechanism (20, see column 5 line 33).

Regarding claim 6, the shape of the compressor unit is not explicitly disclosed. However, as rectangular parallelepipeds are the single most conventional shape to ship items in, it would have been obvious to one of ordinary skill in the art at the time of the invention to shape the compressor unit as a rectangular parallelepiped of any required dimension in order to best fit the available space and avoid additional charges for shipping oddly shaped objects.

Regarding claims 9 and 12, the main casing of Mathiprakasam has an outlet opening and an inlet opening which provide fluid connection with ducts in fluid communication with the indoor space and outdoor space (see figure 2).

Regarding claims 10 and 11, the installation of the humidity control system in a location under a roof and or on an indoor floor area would have been obvious to one of ordinary skill in the art at the time of the invention, as the less used spaces of attics and basements are the most common installation locations for HVAC systems.

9. Claims 7, 8, 13-16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mathiprakasam (US Patent No. 4,430,864) in view of Wuesthoff et al (US Patent No. 2,942,439).

Regarding claim 13, it is noted that Mathiprakasam does not explicitly disclose intake and outlet fans, the main casing to be shaped like a box, the main casing to be divided into a first and a second internal space with the fans in the first space and the heat exchangers and switching mechanism disposed in the second space. Wuesthoff et al explicitly discloses an air conditioning unit with a box shaped main case (see figure 1) divided into compartments with the fans in one compartment and the remainder of the air conditioning system in the other compartment (see figures 4 and 5). As the systems of Mathiprakasam and Wuesthoff et al are similar in form and function, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the configuration of Wuesthoff et al when applying the system of Mathiprakasam in order to produce a unit which was convenient to ship and install.

Regarding claims 14 and 15, all recited arrangements of the internal structure of the unit would have been obvious to one of ordinary skill in the art at the time of the invention as simple rearrangements of parts which are useful to better fit the required parts into the available space, with various embodiments being implemented for

systems of varying demand requirements and with differently sized and or shaped individual components.

Regarding claims 7, 8, 16, and 18, it is noted that Mathiprakasam does not explicitly disclose the shape of the main casing, the presence of air supplying and air exhausting fans in any particular orientations, or any specific air flow direction. Wuesthoff et al explicitly discloses the use of an air conditioning unit which is box shaped (see figure 1) and uses a multi-blade fan which draws air in from one direction and blows it into a direction lateral to the intake direction (see column 3 lines 14-22), which is used to save space. It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to use two of the mixed flow fans of Wuesthoff et al in a position on the side in the system of Mathiprakasam in order to provide good airflow and therefore improved heat and mass exchange across the heat exchangers of Mathiprakasam. It would further have been obvious to one of ordinary skill in the art at the time of the invention to orient the fans in any required manner in order to increase their effectiveness relative to costs associated with the installation of the system, including space costs caused by required clearances for optimum operation.

Regarding claim 17, it would have been obvious to one of ordinary skill in the art at the time of the invention to locate the intake of the intake fan at a fan communication opening, and the output of the output fan at a fan communication opening, as otherwise the fans would be far less effective at moving air.

10. Claims 19-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mathiprakasam (US Patent No. 4,430,864) in view of Sargent et al (US Patent No. 2,112,221).

Regarding claims 19-21 and 23-27, it is noted that Mathiprakasam does not explicitly disclose the use of a filter. Sargent et al explicitly discloses the use of a filter for intake air at the air inlet (47, 48, see page 3, left column, lines 5-6 and 28-36), in the only air intake passageway which Sargent et al has, which can be taken out (see page 3 left column lines 31-32) and is explicitly disclosed to be a conventional feature (see page 3 left column lines 32-35). It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to implement an air filter or filters at all air intakes in order to improve the air quality and reduce the pollution and or pollen content of the air discharged by the air conditioning system. It would further have been obvious to one of ordinary skill in the art at the time of the invention to make the filters integral with each other, as this increases the effectiveness of the overall filtration.

Regarding claim 22, the main casing, first heat exchanger, and second heat exchanger of Mathiprakasam are disposed adjacently to each other, and the inflow surfaces of the heat exchangers lie on approximately the same plane (see figures 1 and 2).

Double Patenting

11. Claim 1 of this application conflicts with claim 1 of Application No. 11/921296. 37 CFR 1.78(b) provides that when two or more applications filed by the same applicant contain conflicting claims, elimination of such claims from all but one application may be

required in the absence of good and sufficient reason for their retention during pendency in more than one application. Applicant is required to either cancel the conflicting claims from all but one application or maintain a clear line of demarcation between the applications. See MPEP § 822.

12. Claim 1 provisionally rejected on the ground of nonstatutory double patenting over claim 1 of copending Application No. 10/594916. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows:

Regarding claims 1, 2, 4, and 5, claim 1 of '916 claims a humidity control system for supplying either one of a dehumidified first air stream and a humidified second air stream to an indoor space and for discharging the other air stream to an outdoor space (see claim 1 lines 1-3), the humidity control system comprising a refrigerant circuit which includes first and second adsorbent-supported heat exchangers which are fluidly connected in the refrigerant circuit to perform a refrigeration cycle, and which is capable of reversing the circulation direction of the refrigerant (see lines 4-6); a main unit which includes a main casing (box-shaped casing, see line 8) having therein an air passageway in which the heat exchangers are disposed (see lines 8-9); and a switching mechanism for changing the distribution route of air in the casing depending on the circulation direction of refrigerant in the refrigerant circuit so that the first air stream is

passed through one of the heat exchangers that is functioning as an evaporator while the second air stream is passed through the other heat exchanger that is functioning as a condenser (see lines 11-15); and a compressor unit in which a compressor of the refrigerant circuit is provided (see lines 25-27), wherein the compressor unit houses therein a reversal mechanism for reversing the circulation direction of refrigerant in the refrigerant circuit (see lines 25-27). It is noted that '916 does not explicitly claim the compressor unit to be disposed outside the main casing and in any particular location. However, the rearrangement of parts to better fit into available space and to increase the efficiency of a cooling system by permitting waste heat from the compressor not to reheat cooled air by locating the compressor outside the main unit would have been obvious to one of ordinary skill in the art at the time of the invention.

Regarding claim 7, claim 10 of '916 claims the main casing to be flattened box-shaped, and an air supplying fan and an air exhausting fan to be each formed by a respective multi-blade fan which is configured to draw in air from a lateral side of a fan casing thereof and then deliver it forward, and which is disposed such that the center axle of its impeller is oriented in the thickness direction of the casing (see lines 1-7).

Regarding claim 8, claim 8 of '916 claims the first and second heat exchangers are so arranged as to allow passage of air in the thickness direction of the casing (see lines 4-5).

Regarding claims 9 and 12, claim 5 of '916 claims the humidity control system wherein, in the main casing, an outlet opening and an inlet opening are opened to provide fluid connection with ducts in fluid communication with the indoor space and an

outlet opening and an inlet opening are opened to provide fluid connection with ducts in fluid communication with the outdoor space (see lines 1-5).

Regarding claim 13, claim 1 of '916 claims the casing include an air supplying fan and an air exhausting fan which are disposed in the casing (see line 10), to be box-shaped (see line 8), to have an internal space which is divided into a first space defined along a fan side lateral plate as a lateral plate of the main casing, and a remaining second space (see lines 20-21); and the air supplying fan and the air exhausting fan are disposed in the first space and the first and second heat exchangers and the switching mechanism are disposed in the second space (see lines 22-24).

Regarding claim 14, claim 11 of '916 claims an air supplying opening and an inside air inlet opening which are in fluid communication with the indoor space are provided in one of lateral plates of the main casing orthogonal to the fan side lateral plate, and an air exhausting opening and an outside air inlet opening which are in fluid communication with the outdoor space are provided in the other of the lateral plates (see lines 1-6); in the second space, a first heat exchange chamber in which the first heat exchanger is accommodated and a second heat exchange chamber in which the second heat exchanger is accommodated are defined adjacently side by side in a direction orthogonal to the fan side lateral plate (see lines 7-10); a first air inflow path and a first air outflow path and a second air inflow path and a second air outflow path are further provided in the second space, wherein the first air inflow path and the first air outflow path extend along one of a pair of lateral plates facing the heat exchange chamber (see lines 10-13) and are superimposedly arranged in the thickness direction

of the main casing, and wherein the second air inflow path and the second air outflow path extend along the other of the pair of lateral plates and are superimposedly arranged in the thickness direction of the main casing (see lines 13-17); and the outflow paths are in fluid communication with the first space through fan side communication openings (see lines 18-19).

Regarding claim 15, claim 12 of '916 claims an air supplying opening and an inside air inlet opening which are in fluid communication with the indoor space are provided in one of lateral plates of the main casing orthogonal to the fan side lateral plate, and an air exhausting opening and an outside air inlet opening which are in fluid communication with the outdoor space are provided in the other of the lateral plates (see lines 1-6); in the second space, a first heat exchange chamber in which the first heat exchanger is accommodated and a second heat exchange chamber in which the second heat exchanger is accommodated are defined adjacently side by side in the longitudinal direction of the fan side lateral plate (see lines 7-10); a first air inflow path and a first air outflow path and a second air inflow path and a second air outflow path are further provided in the second space, wherein the first air inflow path and the first air outflow path extend along one of a pair of lateral plates facing the heat exchange chamber (see lines 10-13) and are superimposedly arranged in the thickness direction of the main casing, and wherein the second air inflow path and the second air outflow path extend along the other of the pair of lateral plates and are superimposedly arranged in the thickness direction of the main casing (see lines 13-17); and the outflow

paths are in fluid communication with the first space through fan side communication openings (see lines 18-19).

Regarding claim 19, claim 16 of '916 claims the humidity control system to include an outdoor filter which is arranged and formed along both an outside air inflow surface of the first heat exchanger and an outside air inflow surface of the second heat exchanger (see lines 1-4).

Regarding claim 20, claim 17 of '916 claims a first passageway in which the first heat exchanger is disposed and a second passageway in which the second heat exchanger is disposed are formed in the casing; and the outdoor filter comprises a first filter part disposed in the first passageway and a second filter part disposed in the second passageway (see lines 1-6).

Regarding claim 21, claim 18 of '916 claims in the outdoor filter, the first filter part and second filter part are integral with each other; and the outdoor filter is arranged such that it extends over both the outside air inflow surface of the first heat exchanger and the outside air inflow surface of the second heat exchanger (see lines 1-6).

Regarding claim 22, claim 19 of '916 claims the in the main casing the first and second heat exchangers are disposed adjacently to each other and the inflow surface of the first and second heat exchangers lie on approximately the same plane (see lines 1-4).

Regarding claim 23, claim 20 of '916 claims the main casing to be provided with a take-out opening from which the outdoor filter can be taken out.

Regarding claim 24, claim 21 of '916 claims the humidity control system to be operable to switch its operation between a first operation in which outside air is distributed first through the first filter part and then through the first heat exchanger and is thereafter supplied to the indoor space while simultaneously room air is distributed first through the second heat exchanger and then through the second filter part and is thereafter expelled or discharged to the outside space, and a second operation in which outside air is distributed first through the second filter part and then through the second heat exchangers and is thereafter supplied to the indoor space while simultaneously room air is distributed first through the first heat exchanger and then through the first filter part and is thereafter expelled or discharged to the outdoor space.

Regarding claim 25, claim 22 of '916 claims the humidity control system to include an indoor filter which is disposed in a passageway through which room air is made to flow into either of the first or the second passageways; and the humidity control system is operable to switch its operation between a first operation in which outside air is distributed first through the first filter part and then through the first heat exchanger and is thereafter supplied to the indoor space while simultaneously room air is distributed first through the indoor filter, then through the second heat exchanger, and then through the second filter part and is thereafter expelled to the outside space, and a second operation in which outside air is distributed first through the second filter part and then through the second heat exchanger and is thereafter supplied to the indoor space while simultaneously room air is distributed first through the indoor filter, then

through the first heat exchanger, and then through the first filter part and is thereafter expelled to the outdoor space.

Regarding claim 26, claim 23 of '916 claims a first passageway in which the first heat exchanger is disposed, a second passageway in which the second heat exchanger is disposed, and a room air supplying passageway through which room air is made to flow into either of the first or the second passageways are formed in the main casing; and the humidity control system includes an indoor filter which is disposed in the room air supplying passageway.

Regarding claim 27, claim 24 of '916 claims a first passageway in which the first heat exchanger is disposed and a second passageway in which the second heat exchanger is disposed are formed in the main casing; and the humidity control system includes: a suction opening which faces the indoor space by being in fluid connection with an air passageway which is located nearer to the indoor space than the first and second passageways in the main casing; and an indoor filter which is disposed in the vicinity of an opening part of the suction opening .

Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Doble (US Patent No. 1,349,876) discloses a fuel burning apparatus with a multiblade blower. Morse et al (US Patent No. 1,863,577) discloses an adsorbent air conditioning system. Barstow et al (US Patent No. 1,952,406) discloses a moisture control system. Geise (US Patent No. 1,983,606) discloses a multiblade fan for use in air conditioning systems. Korin (US Patent Application No. 2002/0078696) discloses a hybrid heat pump with adsorbent and conventional elements. Forkosh et al (US Patent Application Publication No. 2004/0112077) discloses a combined dehumidifier/AC system which is reversible, as does Lee et al (US Patent Application Publication No.s 2004/0123616, 2004/0134211, and 2004/0134212). Stoever (US Patent No. 2,008,407) discloses a refrigeration plant with airflow reversal. Newton (US Patent No. 2,257,478) discloses an air conditioning system with a reversible refrigerant loop, adsorbent heat exchangers, and a reversible air flow. Williams (US Patent No. 2,282,015) discloses the use of a multiblade blower used in an air conditioning unit. Ringquist et al (US Patent No. 2,481,348) discloses an air conditioning system with reversible air flow. Burgess (US Patent No. 2,759,334) discloses an air to air heat pump apparatus in a rectangular case with separate segments for heat exchangers and fans. Jue (US Patent No. 2,763,132) discloses a dehumidifying apparatus with reversible refrigerant flow and reversible air flow. Weinstein (US Patent No. 3,028,734) discloses an air conditioning apparatus with reversible flow. Fordsmand (US Patent No. 3,220,212) discloses an air conditioner unit with alternate air and refrigerant paths. And

Maeda (US Patent No. 5,816,065) discloses an adsorbent desiccant assisted air conditioning system with reversible air and refrigerant flows as prior art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXIS K. COX whose telephone number is (571)270-5530. The examiner can normally be reached on Monday through Thursday 8:00a.m. to 5:30p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frantz Jules can be reached on 571-272-6681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/AKC/

/Frantz F. Jules/

Supervisory Patent Examiner, Art Unit 3744